Stability analysis in stagnation-point flow towards a shrinking sheet with homogeneous - heterogeneous reactions and suction effects

ABSTRACT

A numerical study is evaluate the problem of stagnation –point flow towards a shrinking sheet with homogeneous –heterogeneous reactions with suction effects. A developed model of homogeneous –heterogeneous reaction in boundary layer flow with similar diffusivities for reactant and autocatalysis was apply in this analysis. A stability analysis has been performed to determine which solution is stable and physically realizable by using the bvp4c solver in Matlab. The effects of the governing parameters on the skin friction coefficient, homogeneous –heterogeneous reactions and the velocity and concentration profiles are presented graphically and thoroughly discussed.

Keyword: Dual solutions; Shrinking sheet; Stability analysis; Homogeneous-heterogeneous; Suction